

JPRS-UMM-84-006

28 March 1984

USSR Report

MACHINE TOOLS AND METALWORKING EQUIPMENT

TABLES OF CONTENTS

No. 1, 14 January 1983-

No. 13, 28 December 1983



FOREIGN BROADCAST INFORMATION SERVICE

14 January 1983

USSR REPORT
MACHINE TOOLS AND METALWORKING EQUIPMENT

No. 1

CONTENTS

INDUSTRY PLANNING AND ECONOMICS

- Machine Building and Investment Process
(G. Ya. Kurbatova; EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO
PROIZVODSTVA, Mar 82) 1
- Problems With Repair System Spur Need for Centralized Machine Tool
Repair Centers
(R. Ivut'; SOVETSKAYA BELORUSSIYA, 15 Sep 82) 14

AUTOMATED LINES AND AGGREGATED MACHINING SYSTEMS

- Flexible Machining Systems Discussed
(M. Ignat'ev; LENINGRADSKAYA PRAVDA, 8 Jul 82) 17

20 January 1983

USSR REPORT
MACHINE TOOLS AND METALWORKING EQUIPMENT

No. 2

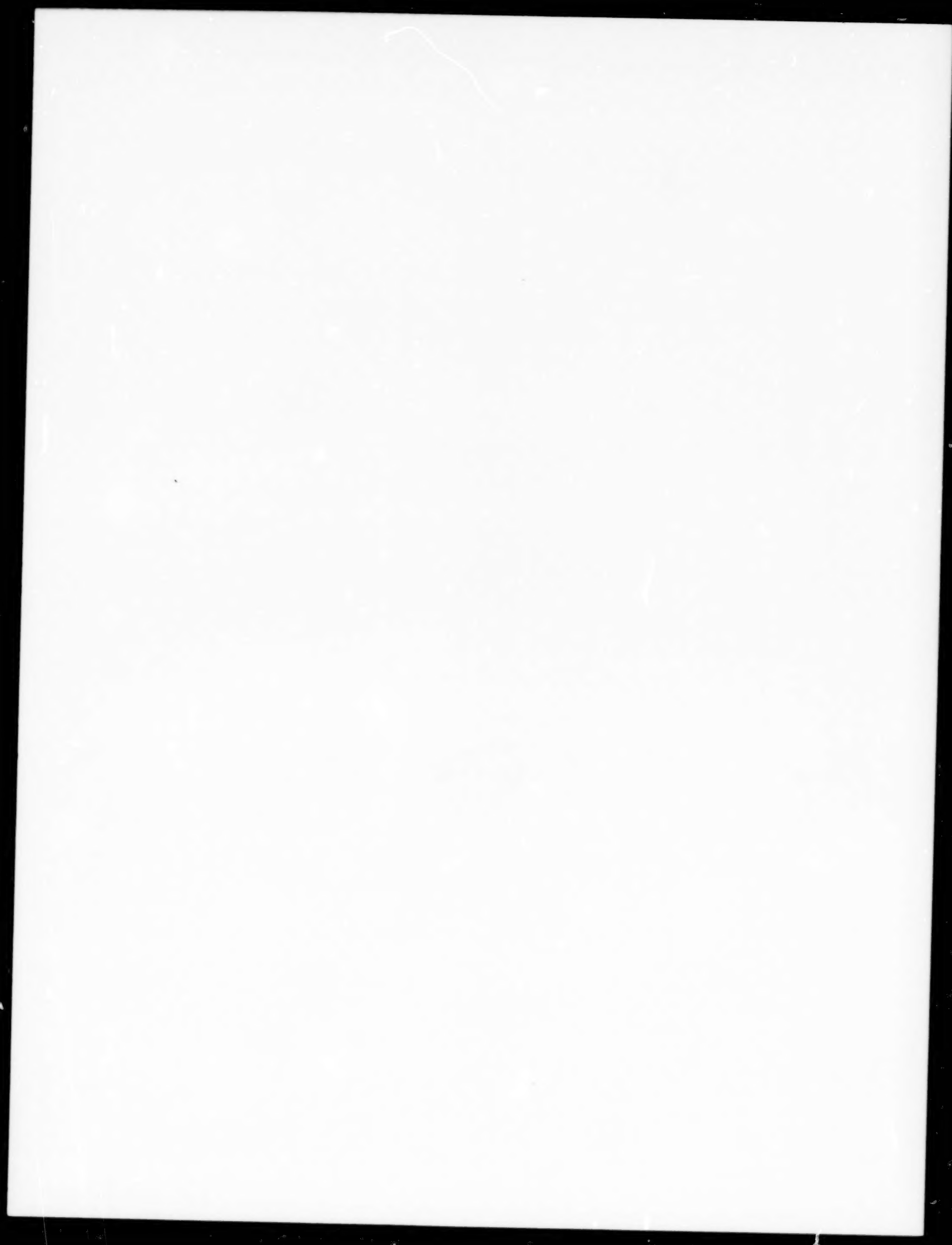
CONTENTS

INDUSTRIAL PLANNING AND ECONOMICS

Profit Distribution in Machine Building Industry Discussed (G. V. Bazarova, O. V. Repina; FINANSY SSSR, Aug 82).....	1
Collocation of Plants, Natural Resources, Markets Discussed (A. Tselikov; PLANOVOYE KHOZYAYSTVO, Sep 82).....	14
Intrabranh Redistribution of Financial Resources Discussed (T. V. Selezneva, V. A. Romanenkova; FINANSY SSSR, Sep 82).....	22
Briefs	
Heavy Machine Building Deputy Minister's Death	29

AUTOMATED LINES AND AGGREGATED MACHINING SYSTEMS

Uses of NC Machines Discussed (G. I. Bliznyukov, B. I. Tsukrov; MASHINOSTROITEL', Sep 82).....	30
Institute's Inventors Demonstrate Their Work (MASHINOSTROITEL', Sep 82).....	33
Automated Lines, Metal Cutting Machine Tools (V. S. Belov, N. F. Khlebalin; STANDARTY I KACHESTVO, Sep 82).....	36
Microprocessor Module for Numerically Controlled Machine Tools Outlined (V. L. Sosonkin, V. A. Latyshev; MEKHANIZATSIYA I AVTOMATIZATSIYA PROIZVODSTVA, No 10, 1982).....	42



ROBOTICS

Synthesis of Automatic Manipulator Movements Discussed (V. F. Krasnikov; MEKHANIZATSIYA I AVTOMATIZATSIYA PROIZVODSTVA, Oct 82)	47
Use of Balanced Manipulators (V. N. Danilevskiy, I. L. Vladov; MEKHANIZATSIYA I AVTOMATIZATSIYA PROIZVODSTVA, Oct 82)	65
Standardization of Linear Manipulator Modules According to Design Parameters (I. I. Pavlenko, A. A. Panov; MEKHANIZATSIYA I AVTOMATIZATSIYA PROIZVODSTVA, Oct 82)	71

17 February 1983

USSR REPORT
MACHINE TOOLS AND METALWORKING EQUIPMENT

No. 3

CONTENTS

INDUSTRY PLANNING AND ECONOMICS

- Analysis of Capital Gains in Machinebuilding Industry
(I. P. Zhitnaya; BUKHGALTERSKIY UCHET, Oct 82)..... 1
- Flexibility in Machinebuilding
(V. Fal'tsman, V. Borisov; PLANOVVOYE KHOZYAYSTVO,
Nov 82)..... 6
- 'Elektronmash-82' Pavilion Described
(M. Semenov; EKONOMICHESKAYA GAZETA, Dec 82)..... 18

METAL-CUTTING AND METAL-FORMING MACHINE TOOLS

- More Efficient Use of Metal-Cutting Tools Called For
(B. Latyshev; MATERIAL'NO-TEKHNICHESKOYE SNABZHENIYE,
No 8, 1982)..... 20

ROBOTICS

- CEMA Cooperation in Industrial Robot Technology
(Yuriy Sinyakov; KOMMUNIST, 11 Jan 83)..... 27
- Robots in Machinebuilding
(Alexander Stroganov; MOSCOW NEWS, 16-23 Jan 83)..... 30

17 March 1983

USSR REPORT

MACHINE TOOLS AND METALWORKING EQUIPMENT

No. 4

CONTENTS

INDUSTRY PLANNING AND ECONOMICS

Soviet Heavy Engineering Industry: New Machinery (SOVIET REPORT, No 2, 1982)	1
Allocation of Funds to Machinebuilding, Metalworking Enterprises Analyzed (A. Popov; VESTNIK STATISTIKI, Dec 82)	5
Machine Tool Trade Among CEMA Member Countries Reviewed (Vyacheslav Moiseyenko, Yevgeniy Yegoshin; EKONOMICHESKOYE SOTRUDNICHESTVO STRAN-CHLENOV SEV, Oct 82)	12
Intrabranh Production Seen as a Way to Efficient Machinebuilding (G. Dzhavadov, I. Semikras; PLANOVOYE KHOZYAYSTVO, Jan 83) ...	20
Metal Requirements for Machinebuilding Discussed (A. I. Akopyan; PROMYSHLENNOST' ARMENII, Oct 82)	28
Briefs	
Machine Tools With Robots	32
Machine Tool Export-Import	32
New Machine Tool	32
Robot Production	32
Rapidly Readjustable Fixtures	33
Robot Development	33

OTHER METALWORKING EQUIPMENT

New Generation of 'Sensory Organ' Machine Tools Developed in Kiev (S. Tsikora; IZVESTIYA, 21 Nov 82)	34
---	----

AUTOMATED LINES AND AGGREGATE MACHINING SYSTEMS

Semiautomatic NC Chuckler Developed (K.M. Tarasov; SOVIET REPORT, No 5, 1982)	36
--	----

29 April 1983

USSR REPORT
MACHINE TOOLS AND METALWORKING EQUIPMENT

No . 5

CONTENTS

INDUSTRY PLANNING AND ECONOMICS

Heavy Industry Exhorted To Produce More, Better Machinery (IZVESTIYA, 4 Feb 83)	1
System for Planning in Machinebuilding Enterprises (N.V. Luzhetskiy, K. Ye. Fedunenko; TEKHNLOGIYA I ORGANIZAT- SIYA PROIZVODSTVA, Apr-Jun 82)	4
All-Union Scientific-Technical Society Meets on Machinebuilding (A. Antonov; TRUD, 25 Jan 82)	7
Estonian Quality Control System for Machinebuilding Described (P. Kudinskiy; SOVETSKAYA ESTONIYA, 11 Jan 83)	11

METAL-CUTTING AND METAL-FORMING MACHINE TOOLS

Machinebuilding Production Plans to 1990 Discussed (N. Kostikov; S. M. Kirov; PRAVDA, 7 Mar 83)	14
Press Forging Machinebuilding Plans for 1983 (A.P. Vasil'yev; KUZNECHNO-SHTAMPOVOCHNOYE PROIZVODSTVO, Jan 83)	18
Use of Multi-Machine Tool Service in Individual Production (A.F. Siregub, et al.; TEKHNLOGIYA I ORGANIZATSIYA PROIZVODSTVA, Apr-Jun 82)	25
Sheet Bending Machine With NC Model I3843P (R.D. Lapsker, A.T. Lepilin; KUZNECHNO-SHTAMPOVOCHNOYE PROIZVODSTVO, May 82	28

AUTOMATED LINES AND AGGREGATE MACHINING SYSTEMS

Ukraine Uses Universal Assembly Machines (B.N. Kryzhanovskiy; TEKHNLOGIYA I ORGANIZATSIYA PROIZVODSTVA. NAUCHNO-PROIZVODSTVENNYY SBORNIK, Mar 82)	31
Uses of Numerical Control in Preventing Breakdowns (B. A. Dmitrichenko; TEKHNLOGIYA I ORGANIZATSIYA PROIZVODSTVA, Jan-Mar 83)	35
Automated Machine for Horizontal Continuous Casting (V.L. Ankhimuk, G.P. Komlik; MEKHANIZATSIYA I AVTOMATIZATSIYA PROIZVODSTVA, Jan 83)	39
Automated Production Processes Abroad Discussed (M.K. Uskov, et al.; TEKHNLOGIYA I ORGANIZATSIYA PROIZVODSTVA, Jan-Mar 83)	44

ROBOTICS

Robotics Conference Highlighted (V. Sivakov; SOVETSKAYA BELORUSSIYA, 25 Jan 83)	48
Coordination of Work on Automated Manipulators Described (V.M. Guslits; MEKHANIZATSIYA I AVTOMATIZATSIYA PROIZVODSTVA, Jan 83)	51

18 May 1983

USSR REPORT
MACHINE TOOLS AND METALWORKING EQUIPMENT

No. 6

CONTENTS

INDUSTRY PLANNING AND ECONOMICS

Machinebuilding Industry in UkSSR Discussed (O. Orlov, et al.; EKONOMIKA SOVETSKOY UKRAINY, Jul 81).....	1
Improving Calculation of Production Capacity for Machine- building Plants (O. Smolyakova, N. Lepa; EKONOMIKA SOVETSKOY UKRAINY, Jul 81).....	6
Improving Specialization of Tool Production (B. Kryzhanovskiy; EKONOMIKA SOVETSKOY UKRAINY, Jul 81).....	15
Price Formation for Machinebuilding Components (E. Shabol'tas, I. Vishnevskiy; EKONOMIKA SOVETSKOY UKRAINY, Jul 81).....	26

METAL-CUTTING AND METAL-FORMING MACHINE TOOLS

Table of Contents for 1982 (MEKHANIZATSIYA I AVTOMATIZATSIYA PROIZVODSTVA, Dec 82).....	34
---	----

OTHER METALWORKING EQUIPMENT

Factories Struggle To Obtain Industrial Robots (V. Kozin, Yu. Suslov; EKONOMICHESKAYA GAZETA, Mar 83).....	48
Thirty Years of Red Tape Delays Introduction of New Chuck (B. Gafiatulin; TRUD, 4 Feb 83).....	52

Numerical Control Jig-Turret Presses (KUZNECHNO-SHTAMPOVOCHNOYE PROIZVODSTVO, Apr 82).....	56
---	----

Hydraulic Sheet Bending Presses With Programmed Control (KUZNECHNO-SHTAMPOVOCHNOYE PROIZVODSTVO, Apr 82).....	58
--	----

AUTOMATED LINES & AGGREGATE MACHINING SYSTEMS

Automated Equipment Complex With NC Model AKI2314P-1 (R. D. Lapsker, V. N. Ignatov; KUZNECHNO-SHTAMPOVO- CHNOYE PROIZVODSTVO, May 82).....	60
--	----

15 June 1983

USSR REPORT
MACHINE TOOLS AND METALWORKING EQUIPMENT

No. 7

CONTENTS

INDUSTRY PLANNING AND ECONOMICS

Machinebuilding Progress in Uzbekistan Discussed (Yu. Volkov; EKONOMIKA I ZHIZN', Nov 82)	1
Production Capability of Machinebuilding Enterprises Calculated (Ya. Poburko; EKONOMIKA SOVETSKOY UKRAINY, Jan 83)	5
Automated Control of Machinebuilding Enterprises (I. Petrovich, V. Ignatyshchenko; EKONOMIKA SOVETSKOY UKRAINY, Jan 83)	13
Problems Impeding Superpowered Machinery Production Discussed (B. Medovar; RABOCHAYA GAZETA, 2 Feb 83)	23

OTHER METALWORKING EQUIPMENT

Labor-Consuming Quality of Machining Analyzed (V. G. Abramyan; PROMYSHLENNOST' ARMENII, Dec 82)	27
--	----

AUTOMATED LINES & AGGREGATE MACHINING SYSTEMS

Computer Numerical Systems Planned (V. A. Kruglov; MEKHANIZATSIYA I AVTOMATIZATSIYA PROIZVODSTA, Jan 83)	31
--	----

ROBOTICS

Expanded Uses for Industrial Robots Discussed (I. Mityashin; SOTSIALISTICHESKAYA INDUSTRIYA, 24 Feb 83)	39
--	----

ERRATUM: In JPRS 83490 of 18 May 1983, No 6 of this series,
pp 48-51 article entitled FACTORIES STRUGGLE TO OBTAIN
INDUSTRIAL ROBOTS should have been listed under
ROBOTICS category instead of OTHER METALWORKING
EQUIPMENT.

15 July 1983

USSR REPORT
MACHINE TOOLS AND METALWORKING EQUIPMENT

No. 8

CONTENTS

INDUSTRY PLANNING AND ECONOMICS

- On Intensifying Production of Machinebuilding Enterprises
(G. Kulagin; PLANOVOYE KHOZYAYSTVO, Apr 83) 1

Briefs

- Seeing Robot 12
Automated Boring Machines 12
Special Metal Processor 12
Assembly Robot 12
Minister of Housing and Municipal Services 13
Hot Stamping Press in Udmurtia 13
Increasing Robot Numbers 13
Circular Weaving Machines 13
Micron Measuring Equipment 13
Postal Robots 14
'Strela' Picks Up Speed 14
Working Conditions, Safety 14

AUTOMATED LINES AND AGGREGATE MACHINING EQUIPMENT

- Automation's Role in Heating Technology Improvements Discussed
(KUZNECHNO-SHTAMPOVOCHNOYE PROIZVODSTVO, Nov 82) 15

- Systems Approach to Normal Fuel Consumption,
by G. G. Nemzer, et al.
Fuel Consumption Reduction in Heating Metal,
by G. G. Nemzer, V. I. Berbenev
Analysis of Heating Furnace Operations,
by G. A. Zotov, K. M. Rotnitskiy

ROBOTICS

Simple Automatic Manipulator for Small-Series Stamping (A. A. Kozlov; MEKHANIZATSIYA I AVTOMATIZATSIYA PROIZVODSTVA, Dec 82)	36
SM40TS4011 AM Modified for MR73-A Centering-Milling Machine (Yu. P. Blinov; MEKHANIZATSIYA I AVTOMATIZATSIYA PROIZVODSTVA, Dec 82)	41
RPGIM Cold Die Forging AM Developed by Altay Institute (A. I. Novoselov, G. G. Chernykh; MEKHANIZATSIYA I AVTOMATIZATSIYA PROIZVODSTVA, Dec 82)	45

27 October 1983

USSR REPORT
MACHINE TOOLS AND METALWORKING EQUIPMENT

No. 9
CONTENTS

INDUSTRY PLANNING AND ECONOMICS

Party Officials at Machine Tool Plant Speak Out on Productivity (MOSKOVSKAYA PRAVDA, 26 Jul 83).....	1
Plant Director Calls for Greater Economic Autonomy (I. Yashkin; PRAVDA, 29 Jun 83).....	9
Continued Production of Outdated Machine Tools Criticized (Anatoliy Agranovskiy; IZVESTIYA, 30 Jun 83).....	13
Tbilisi Stankostroitel' Adopting New Machine Tools, Overcoming Lag (Sh. Amashukeli; KOMMUNISTI, 4 May 83).....	21

METAL-CUTTING AND METAL-FORMING MACHINE TOOLS

How To Improvise Start-Up of New 55-Ton Rotary Mill (V. Bondarenko; SOTSIALISTICHESKAYA INDUSTRIYA; Jul 83).....	22
---	----

AUTOMATED LINES AND AGGREGATED MACHINING SYSTEMS

Tbilisi Plant Develops Programmable Lathe (Albert Kochetkov; ZARYA VOSTOKA, 5 May 83).....	25
Automated Lines of Present, Future Factories Viewed (K. Frolov; ZNANIYE-SILA, No 6, Jun 83).....	27

Orsha Plant's New NC Machines, Shortage of Qualified Operators

(A. Kononovich; PROMYSHLENNOST' BELORUSSIYA, No 3,
Mar 83)..... 32

ROBOTICS

Evolution of USSR - CEMA Robot Production Reviewed
(B. Barakhta; PRAVDA, 25 Apr 83)..... 37

Plant Manager Interviewed Regarding Robotization Program
(LENINSKOYA ZNAMYA, 11 Jun 83)..... 40

Briefs
Plant Automation by 1990 43

18 November 1983

USSR REPORT
MACHINE TOOLS AND METALWORKING EQUIPMENT

No. 10

CONTENTS

INDUSTRY PLANNING AND ECONOMICS

USSR Machine Tool Trade With FRG Reviewed (A. Grigor'yants; IZVESTIYA, 4 Jul 83)	1
Modern Management, Machine Tools Raise Efficiency at Sverdlov Plant (Gennadiy Andreyevich Studenok; EKONOMICHESKAYA GAZETA, No 27, Jul 83)	4
Specialty Plants To Revive Estonian Metal Working Industry (Kaarel Kil'vits; IZVESTIYA AKADEMII NAUK ESTONSKOY SSR: OBSHCHESTVENNYE NAUKI, No 3, 1983)	10
Aviation Institute Designer on New Technology Lag Time (Yu. Voronov; SOTSIALISTICHESKAYA INDUSTRIYA, 8 Jul 83).	20

METAL CUTTING AND METAL-FORMING MACHINE TOOLS

New Machine Tools, Productivity Gains at Minsk Plant Discussed (V. Revyako; PROMYSHLENNOST' BELORUSSII, No 8, Aug 83) .	23
--	----

OTHER METALWORKING EQUIPMENT

Charged Particle Accelerators Now in Routine Use (V. Glukhikh; PRAVDA, 17 Jul 83)	26
Chelyabinsk Plant's New Forge-Press (EKONOMICHESKAYA GAZETA, No 23, Jun 83)	31

AUTOMATED LINES AND AGGREGATED MACHINING SYSTEMS

Planning, Designs of Flexible Manufacturing Systems Discussed (V. G. Serebrennyy; MASHINOSTROITEL', No 2, Feb 83)	32
---	----

Components of Two Flexible Manufacturing Systems Discussed (P. E. Safragan; MASHINOSTROITEL', No 2, Feb 83)	38
Controller Developed for CNC-Machines Aggregate (Yu. M. Nurgaliyev; MASHINOSTROITEL', No 2, Feb 83) ..	42
Present, Future of 50-Year Old 'Uralmash' Plant Discussed (Yevgeniy Andreyevich Barnachev Interview; NEDEL'YA, No 28, 11-17 Jul 83)	45
Automated Machining Centers at Ivanovo Plant Discussed (Yu. Katkov; EKONOMICHESKAYA GAZETA, No 19, May 83) ..	51

ROBOTICS

Plant Managers Slow To Accept Robots (I. Goloto; SOTSIALISTICHESKAYA INDUSTRIYA, 6 Aug 83).	53
--	----

7 December 1983

USSR REPORT
MACHINE TOOLS AND METALWORKING EQUIPMENT

No. 11

CONTENTS

INDUSTRY PLANNING AND ECONOMICS

Machine Tool Industry Officials Stress Productivity Through Automation (V. M. Grigor'yev; MASHINOSTROITEL', No 3, Mar 83)	1
Problems Related to Assimilation of New Technology Viewed (M. A. Lupachev; FINANSY SSSR, No 5, May 83)	6
Operational Evaluation in Machinebuilding Sector Discussed (A. Yelfimov; EKONOMIKA SOVETSKOY URAINY, No 5, May 83)	11
Statistical Data on USSR Machinebuilding Industry (VESTNIK STATISTIKI, No 4, Apr 83)	21

METAL-CUTTING AND METAL-FORMING MACHINE TOOLS

Orenburg Plant Acquires NC Machines, Must Reorganize (V. Nikitin; EKONOMICHESKAYA GAZETA, No 36, Sep 83) ...	27
Tbilisi Machine Tool Plant Plans Production of New-Generation Lathes (Guram Shalvovich Dzhikidze; EKONOMICHESKAYA GAZETA, No 35, Aug 83)	30

OTHER METALWORKING EQUIPMENT

Portable Program Editor To Increase Productivity of NC Machines (V. A. Vasil'yev, I. D. Sobolev; MEKHANIZATSIYA I AVTOMATIZATSIYA PROIZVODSTVA, No 7, Jul 83)	35
--	----

AUTOMATED LINES AND AGGREGATED MACHINING SYSTEMS

Successful Application of Computer Integrated Manufacturing Systems Reviewed (A. G. Rakovich; MASHINOSTROITEL', No 3, Mar 83)	40
---	----

ROBOTICS

Functions of Kiev's Inter-Plant Council on Robots Discussed (L. Samoylenko; RABOCHAYA GAZETA, 7 Jun 83)	49
--	----

Briefs

Moldavian Council for Robotics	53
Versatile Robots	53
Robots at Work	54
Robotics Engineering Cadres	54
Robot Specialists	55
Minirobots	55
From Exhibition to Shop	55
All-Purpose Robots	55

16 December 1983

USSR REPORT

MACHINE TOOLS AND METALWORKING EQUIPMENT

No. 12

CONTENTS

INDUSTRY PLANNING AND ECONOMICS

Modernization Plans for USSR Machine Tool Industry Reviewed (EKONOMICHESKAYA GAZETA, No 39, Sep 83).....	1
New Machine Tool Technology Numerically Controlled Machine Tools	
Argument for Intra-Association Production of Machine Tools (F. N. Karbovskiy, et al.; MASHINOSTROITEL', No 2, Feb 83).....	7
Modern Machine Tools Cause Production Problems in Minsk Plant (Yu. Lapshin; PROMYSHLENNOST' BELORUSSII, No 5, May 83).....	16
Why Institutes, Ministries and Plants Must Cooperate in Modernization Projects (MOSKOVSKAYA PRAVDA, 13 Aug 83).....	29
Why Skilled Machinists Leave the Profession (Yu. Sakhatskiy; MOSKOVSKAYA PRAVDA, 25 Sep 83).....	32

METAL-CUTTING AND METAL-FORMING MACHINE TOOLS

Debate on Asynchronous, D. C. Drives Reveals Soviet Weaknesses (SOTSIALISTICHESKAYA INDUSTRIYA, 6 May 83).....	35
One Plant Instead of Seven, by V. Kozin Electrical Motor Production, by L. Lyshchinskiy, V. Kagan Comments on Letters of Scientists, by N. Panichev	

AUTOMATED LINES AND AGGREGATED MACHINING SYSTEMS

Impact of Automated Industrial Control System (AICS) Reviewed (G. Yastrebtsov; PRAVDA, 30 Oct 83).....	39
Efficiency of Centrally Controlled Aggregated Machining Systems Discussed (D. Ye. Gindin; MEKHANIZATSIYA I AVTOMATIZATSIYA PROIZVODSTVA, No 8, Aug 83).....	44
Group Method of Turbine Blade Production Reviewed (V. P. Slobodyanyuk, et al.; MEKHANIZATSIYA I AVTOMATIZATSIYA PROIZVODSTVA, No 7, Jul 83).....	55

ROBOTICS

Integration of Industrial Robots Under Current Plan Reviewed (EKONOMICHESKAYA GAZETA, No 22, May 83).....	61
Robots Disrupt Functional Flow in Orlov Plants (I. Pyrkh; SOVETSKAYA ROSSIYA, 14 Jul 83).....	66
Voronezh Plant: Automated Production of Forge-Press Centers (V. V. Karzhan; EKONOMICHESKAYA GAZETA, No 16 May 83).....	70
Kirov Plant Modernization Plans for NC, CNC Machines, Robots Viewed (L. Dmitriyev; SOVETSKAYA MOLDAVIYA, 12 May 83).....	75

28 December 1983

USSR REPORT
MACHINE TOOLS AND METALWORKING EQUIPMENT

No. 13

CONTENTS

INDUSTRY PLANNING AND ECONOMICS

Evolution of 'Technology of Machine Building' in USSR Surveyed (A. A. Matalin; MASHINOSTROITEL', No 6, Jun 83)	1
Continued Automation of Machine Tool Industry Urged (A. K. Antonov Interview; PRAVDA, 25 Sep 83)	8
Slow Progress in Plant Modernization Officially Criticized (Editorial; SOVETSKAYA BELORUSSIYA, 26 Jun 83)	11
NC Machines, Unmanned Machining Centers of Future Factories (Ye. Druzhinina; LENINGRADSKAYA PRAVDA, 10 Oct 83)	13
Modernization, Productivity of Kuybyshev Plants Appraised (Ye. F. Muravyev; EKONOMICHESKAYA GAZETA, No 30, Jul 83)	16

METAL-CUTTING AND METAL-FORMING MACHINE TOOLS

Zhdanov Shipbuilding Plant Installs FMS, Robots (S. Chernov; LENINGRADSKAYA PRAVDA, 16 Sep 83)	21
A Tour Through Leningrad's Main Machine Tool Plant (V. Yefimov; LENINGRADSKAYA PRAVDA, 25 Sep 83)	25

AUTOMATED LINES AND AGGREGATED MACHINING SYSTEMS

Progress, Plans in FMS Implementation Discussed (Various sources, various dates)	29
Dinamo Plant Installs FMS, Robots FMS Implementation Plans Discussed, by N. Rybakov	
Advanced Automated Machine Tool Production in Czechoslovakia Viewed (MASHINOSTROITEL', No 9, Sep 83)	33

Briefs

Adaptive Automated Control	35
Unique Machining Cell	35

ROBOTICS

'Smart' Robot Development and Personnel Training (Various sources, various dates)	37
--	----

Leningrad Robot Operator Personnel Training, by
Yu. Vorob'yevskiy
'Sensing' Robot From Neurocybernetics Institute, by
V. Ogurtsov

Briefs

New-Generation Robots	40
Robotized Machining Cell	40
Robots in Riga	41
Programmable Smart Robot	41

END OF

FICHE

DATE FILMED

4/18/84
